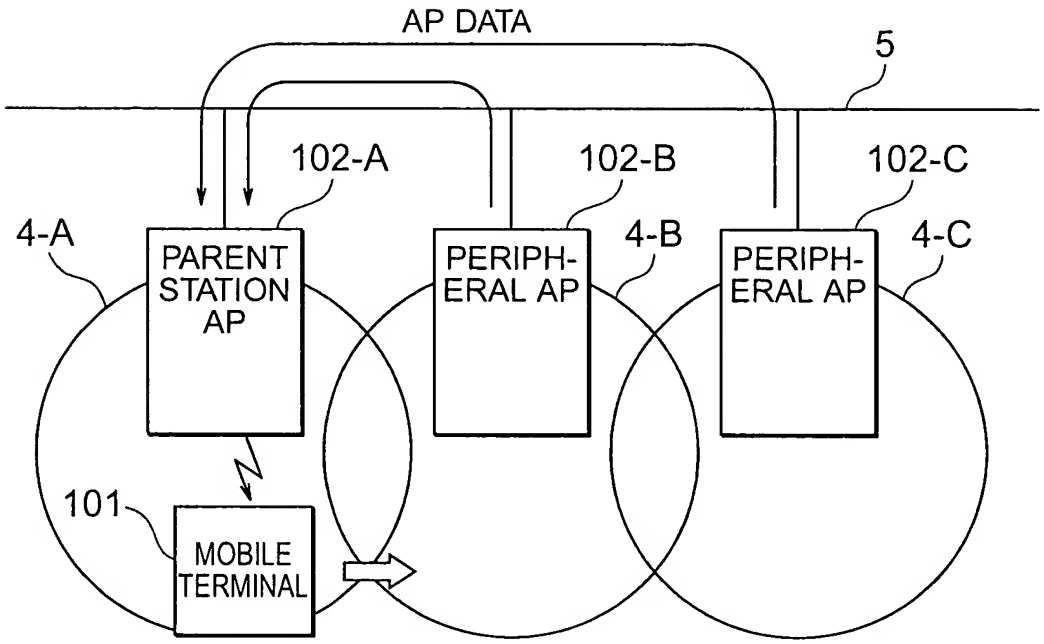


FIG. 1
(PRIOR ART)

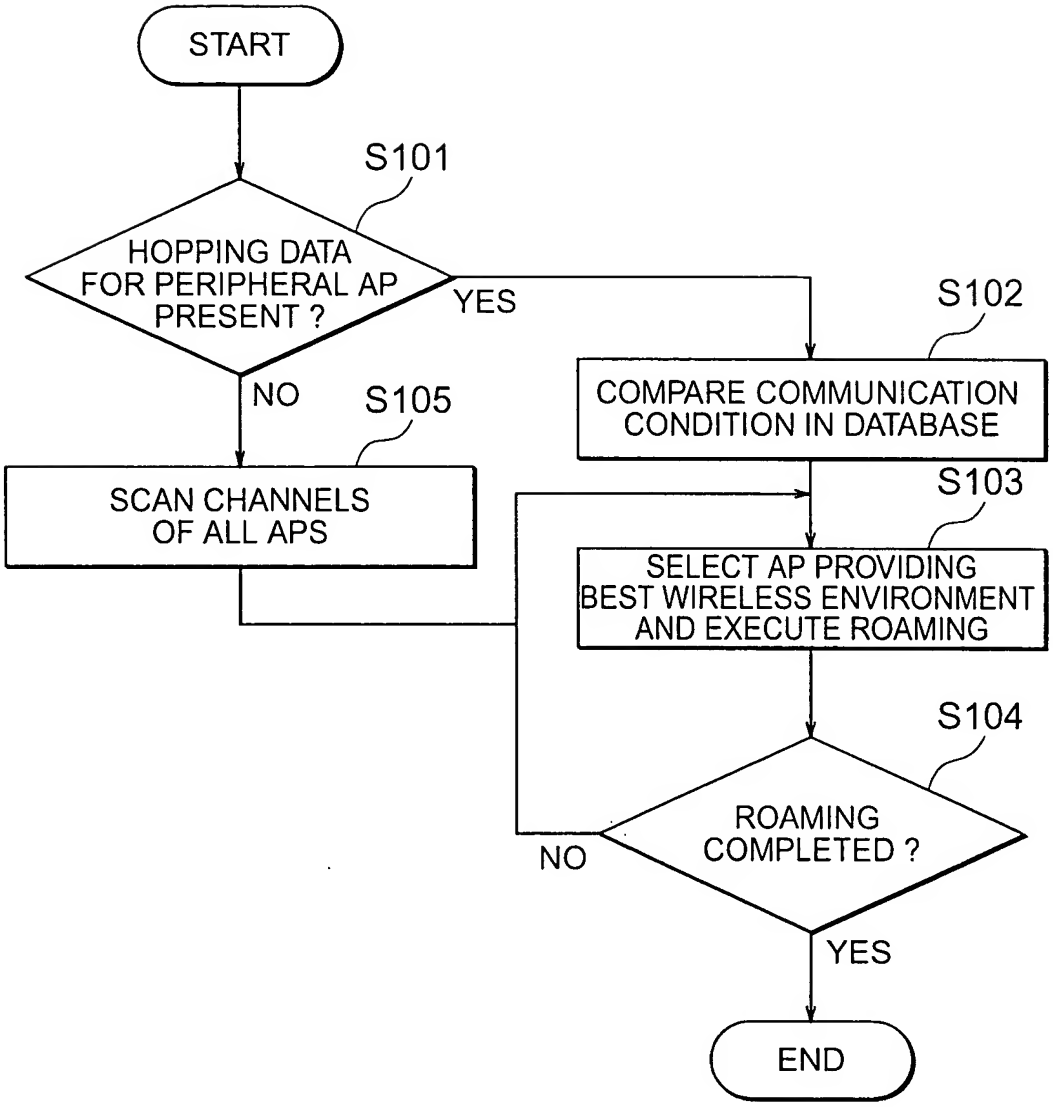


FIG. 2
(PRIOR ART)

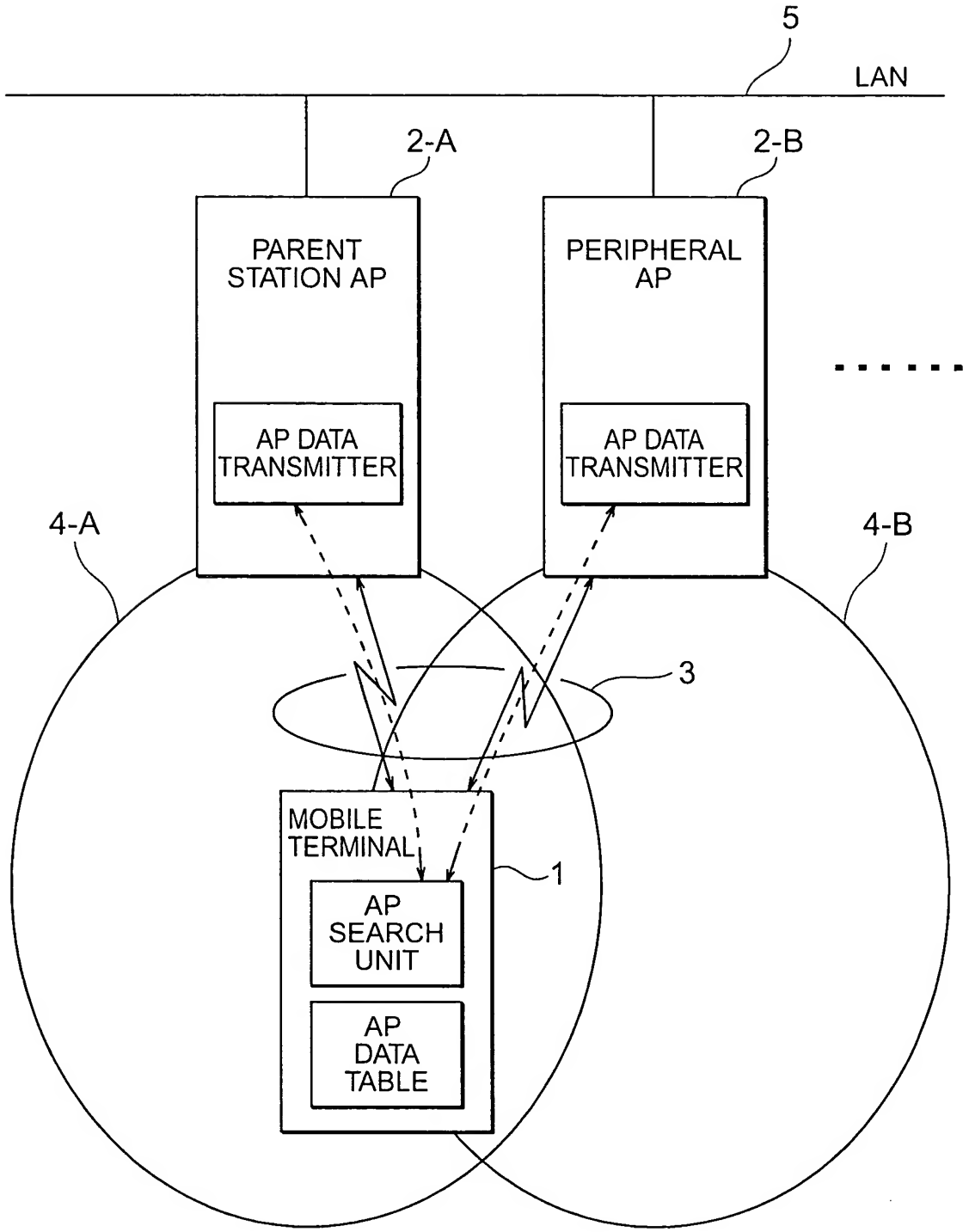

5
LAN
2-A
2-B
PARENT STATION AP
PERIPHERAL AP
AP DATA TRANSMITTER
AP DATA TRANSMITTER
4-A
4-B
3
MOBILE TERMINAL
1
AP SEARCH UNIT
AP DATA TABLE

FIG. 3

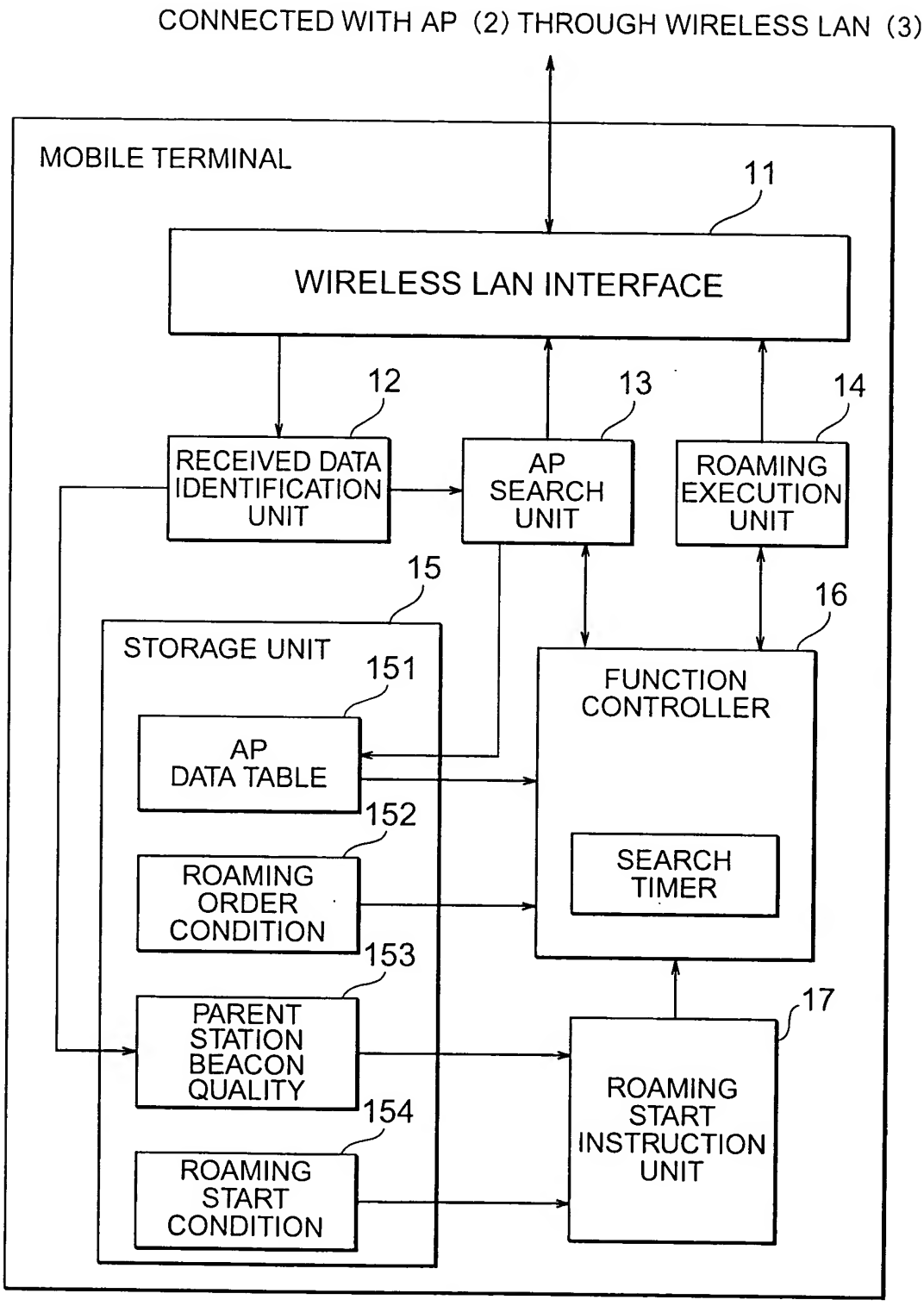

CONNECTED WITH AP (2) THROUGH WIRELESS LAN (3)
MOBILE TERMINAL
11
WIRELESS LAN INTERFACE
12
13
14
RECEIVED DATA IDENTIFICATION UNIT
AP SEARCH UNIT
ROAMING EXECUTION UNIT
15
16
STORAGE UNIT
151
AP DATA TABLE
FUNCTION CONTROLLER
152
ROAMING ORDER CONDITION
SEARCH TIMER
153
PARENT STATION BEACON QUALITY
17
ROAMING START INSTRUCTION UNIT
154
ROAMING START CONDITION

FIG. 4

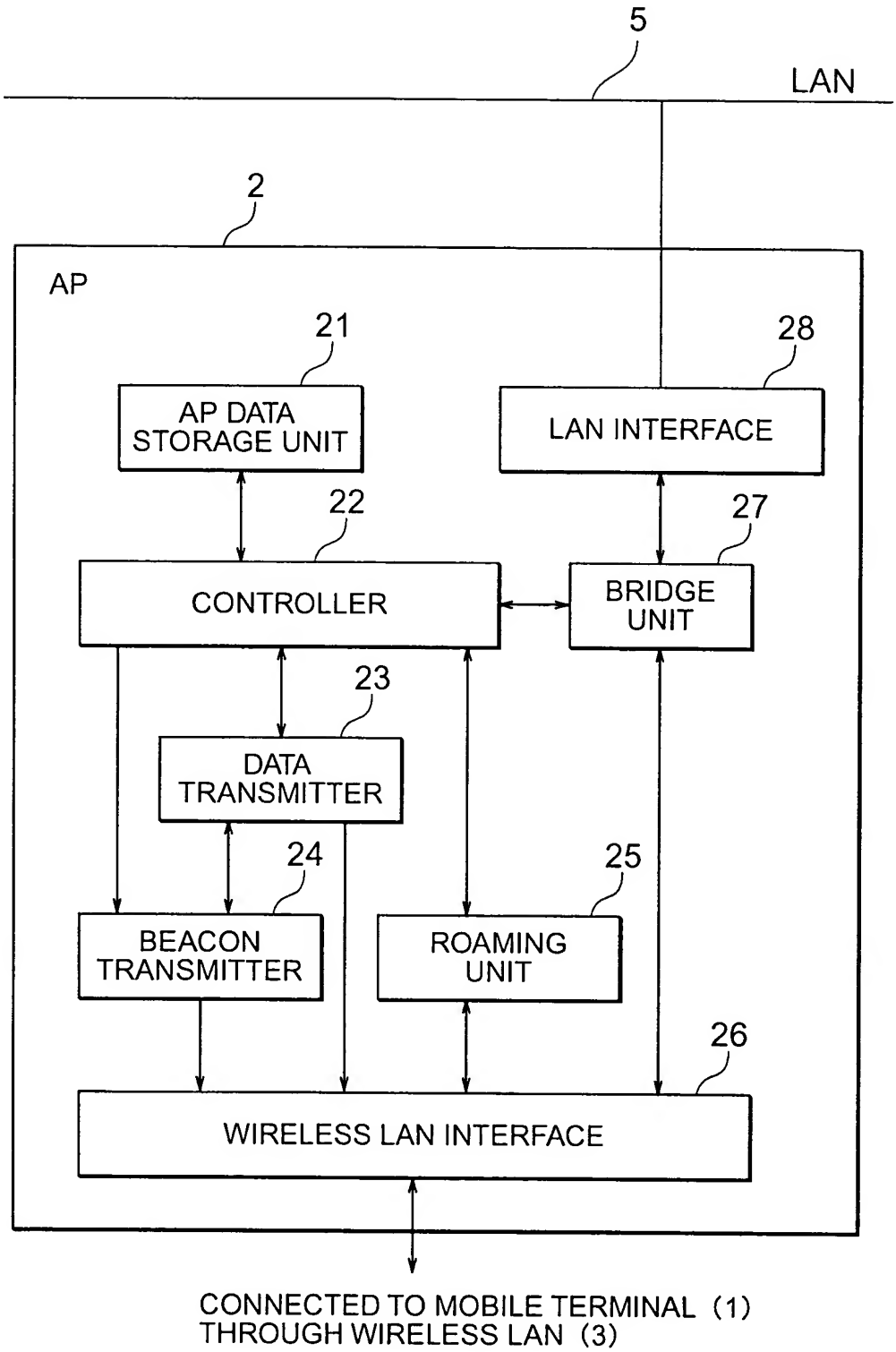

5
LAN
2
AP
21
AP DATA STORAGE UNIT
28
LAN INTERFACE
22
27
CONTROLLER
BRIDGE UNIT
23
DATA TRANSMITTER
24
25
BEACON TRANSMITTER
ROAMING UNIT
26
WIRELESS LAN INTERFACE
CONNECTED TO MOBILE TERMINAL (1)
THROUGH WIRELESS LAN (3)

FIG. 5

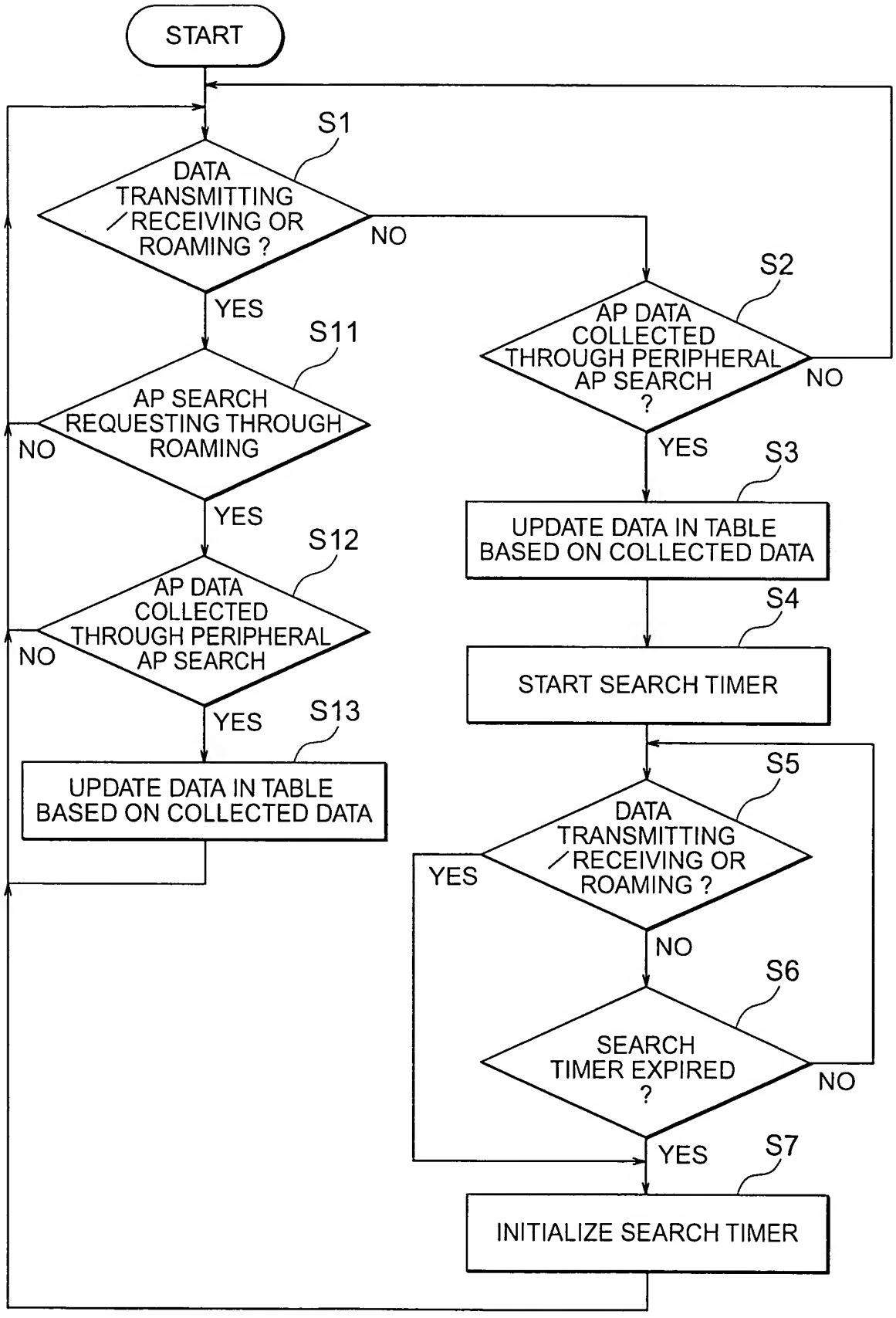

START
S1
DATA TRANSMITTING /RECEIVING OR ROAMING ?
NO
YES
S11
AP SEARCH REQUESTING THROUGH ROAMING
NO
YES
S12
AP DATA COLLECTED THROUGH PERIPHERAL AP SEARCH
NO
YES
S13
UPDATE DATA IN TABLE BASED ON COLLECTED DATA
S2
AP DATA COLLECTED THROUGH PERIPHERAL AP SEARCH ?
NO
YES
S3
UPDATE DATA IN TABLE BASED ON COLLECTED DATA
S4
START SEARCH TIMER
S5
DATA TRANSMITTING /RECEIVING OR ROAMING ?
YES
NO
S6
SEARCH TIMER EXPIRED ?
NO
YES
S7
INITIALIZE SEARCH TIMER

FIG. 6

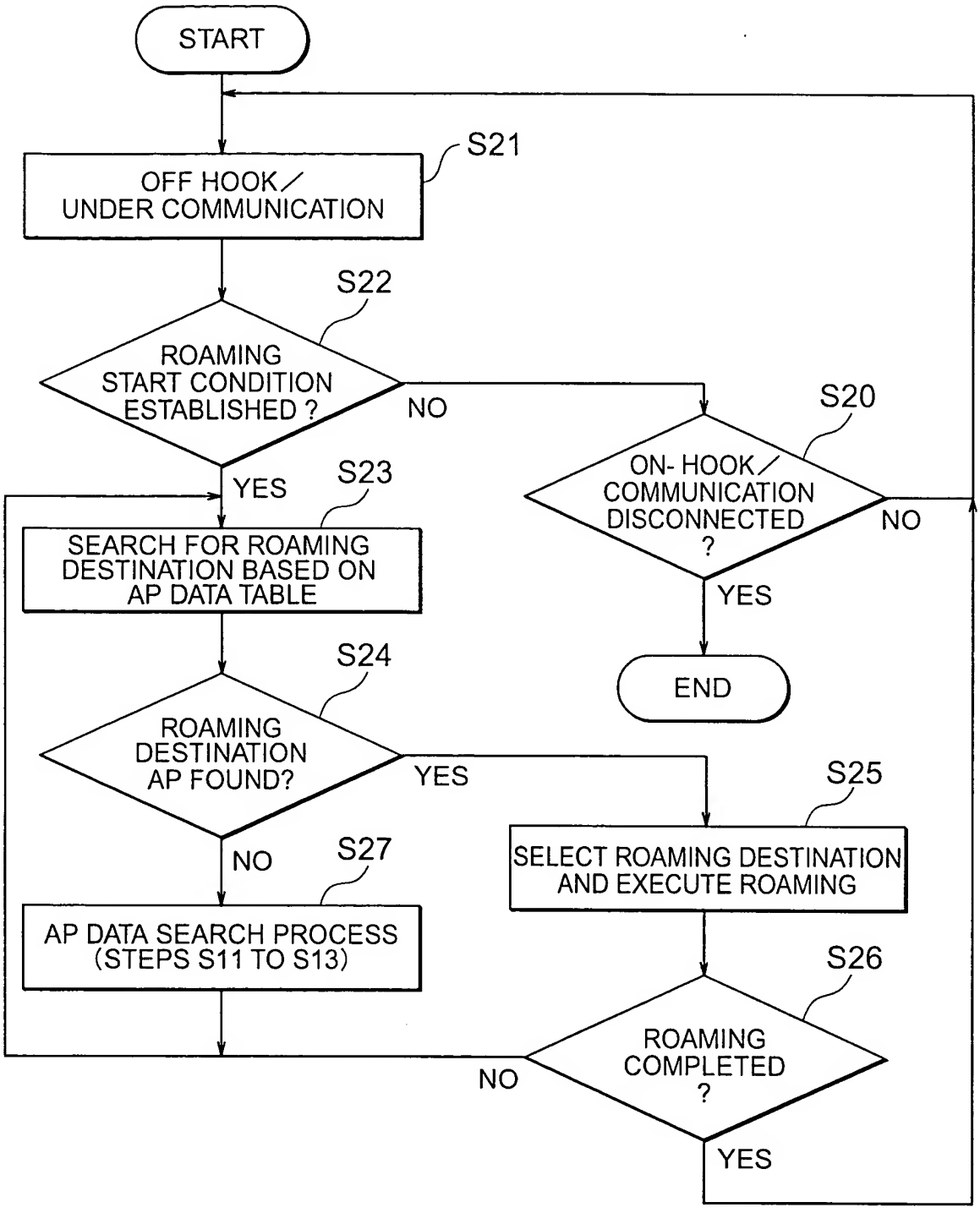

START
S21
OFF HOOK／
UNDER COMMUNICATION
S22
ROAMING
START CONDITION
ESTABLISHED ?
NO
S20
ON- HOOK／
COMMUNICATION
DISCONNECTED
?
NO
YES
S23
SEARCH FOR ROAMING
DESTINATION BASED ON
AP DATA TABLE
YES
END
S24
ROAMING
DESTINATION
AP FOUND?
YES
S25
SELECT ROAMING DESTINATION
AND EXECUTE ROAMING
NO
S27
AP DATA SEARCH PROCESS
(STEPS S11 TO S13)
S26
ROAMING
COMPLETED
?
NO
YES

FIG. 7

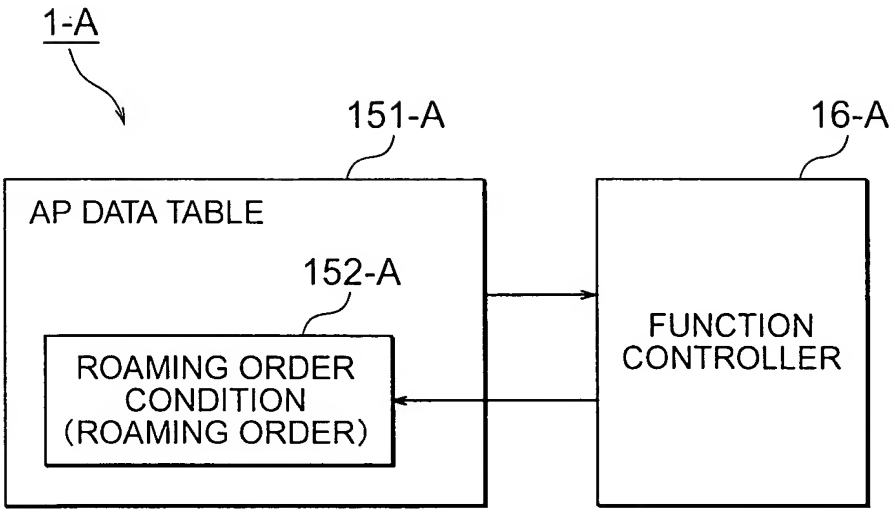


FIG. 8

151-A

AP DATA TABLE				
ROAMING ORDER	MAC ADDRESS OF AP	TIME STAMP	WIRELESS CHANNEL	SSID
1	XX.XX.XX.XX.XX.01	XX.XX.02	1	AP1
2	XX.XX.XX.XX.XX.11	XX.XX.07	9	AP1
⋮				

FIG. 9

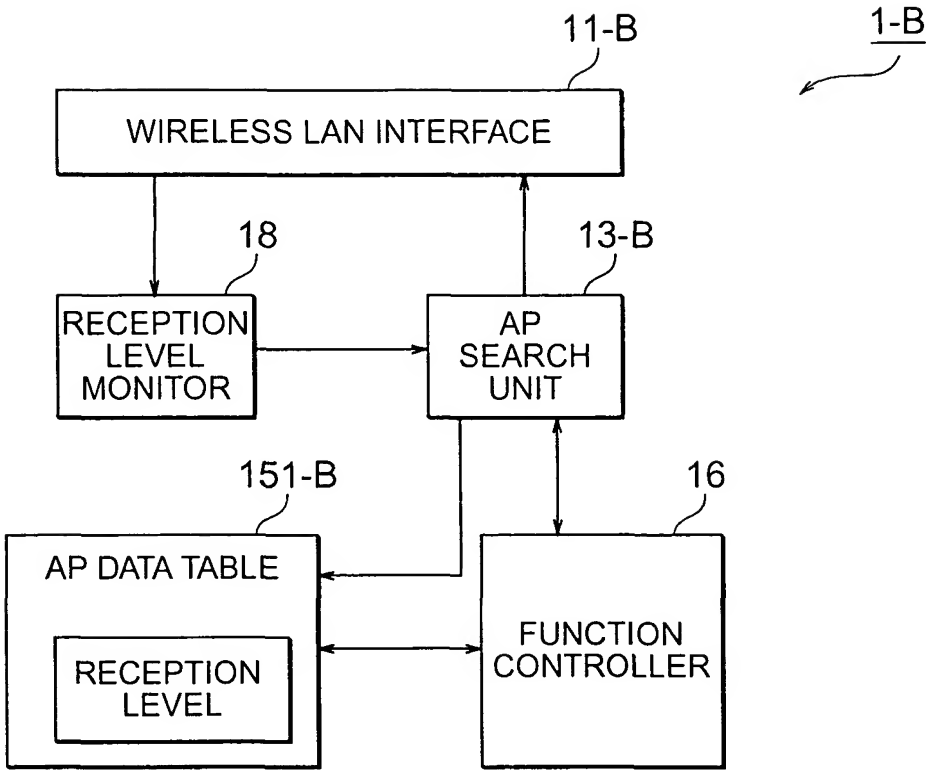


FIG. 10

151-B

AP DATA TABLE					
ROAMING ORDER	MAC ADDRESS OF AP	TIME STAMP	WIRELESS CHANNEL	SSID	RECEPTION LEVEL
1	XX.XX.XX.XX.XX.11	XX.XX.07	9	AP1	100%
2	XX.XX.XX.XX.XX.01	XX.XX.02	1	AP1	70%
⋮					

FIG. 11

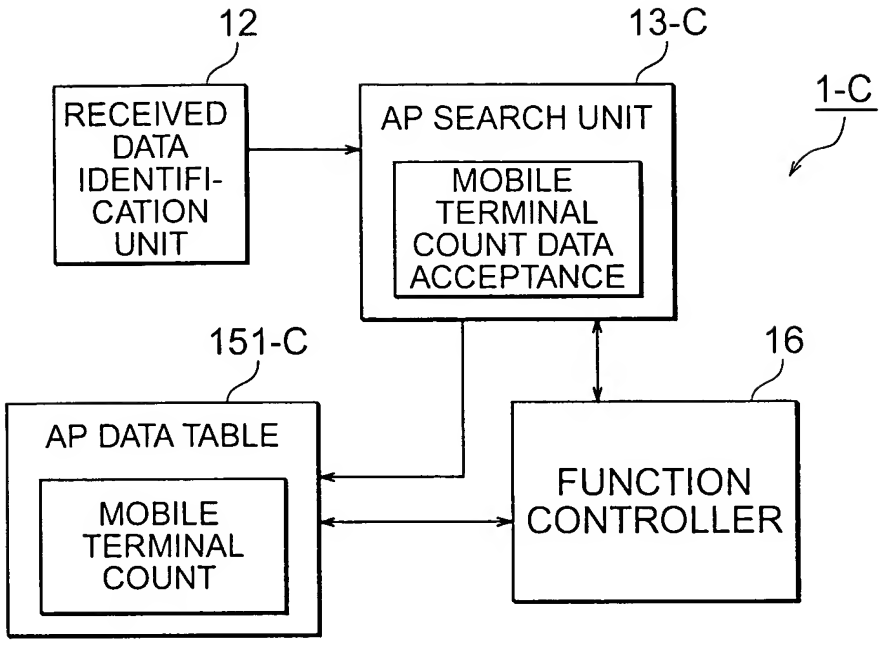

12
13-C
1-C
RECEIVED DATA IDENTIFI-CATION UNIT
AP SEARCH UNIT
MOBILE TERMINAL COUNT DATA ACCEPTANCE
151-C
16
AP DATA TABLE
MOBILE TERMINAL COUNT
FUNCTION CONTROLLER

FIG. 12

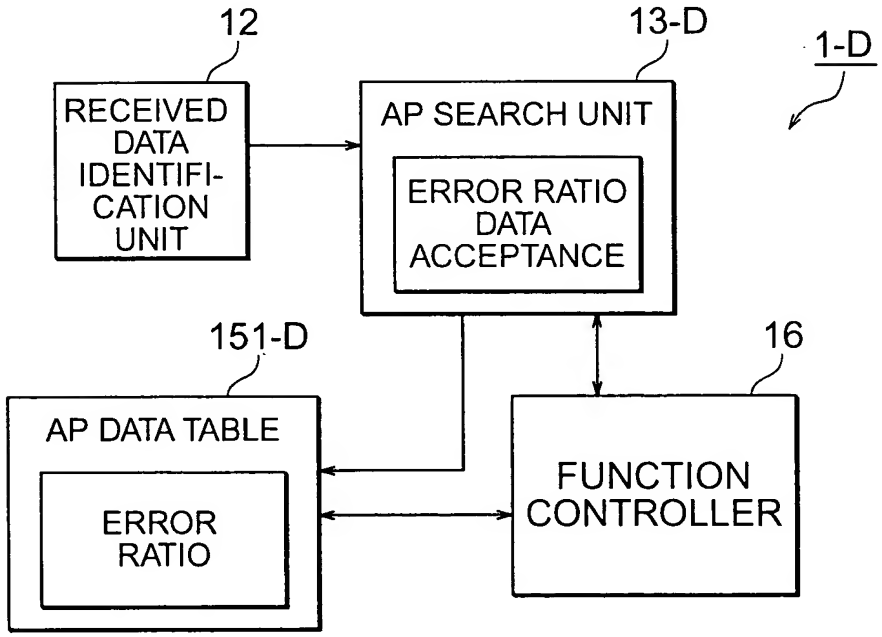

12
13-D
1-D
RECEIVED DATA IDENTIFI-CATION UNIT
AP SEARCH UNIT
ERROR RATIO DATA ACCEPTANCE
151-D
16
AP DATA TABLE
ERROR RATIO
FUNCTION CONTROLLER

FIG. 13

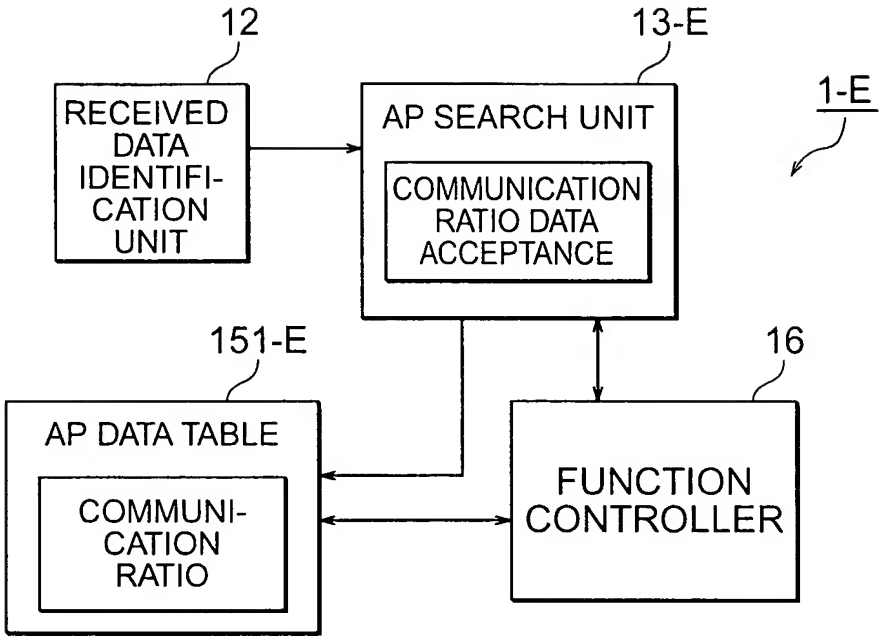

12
13-E
1-E
RECEIVED DATA IDENTIFI-CATION UNIT
AP SEARCH UNIT
COMMUNICATION RATIO DATA ACCEPTANCE
151-E
16
AP DATA TABLE
COMMUNI-CATION RATIO
FUNCTION CONTROLLER

FIG. 14

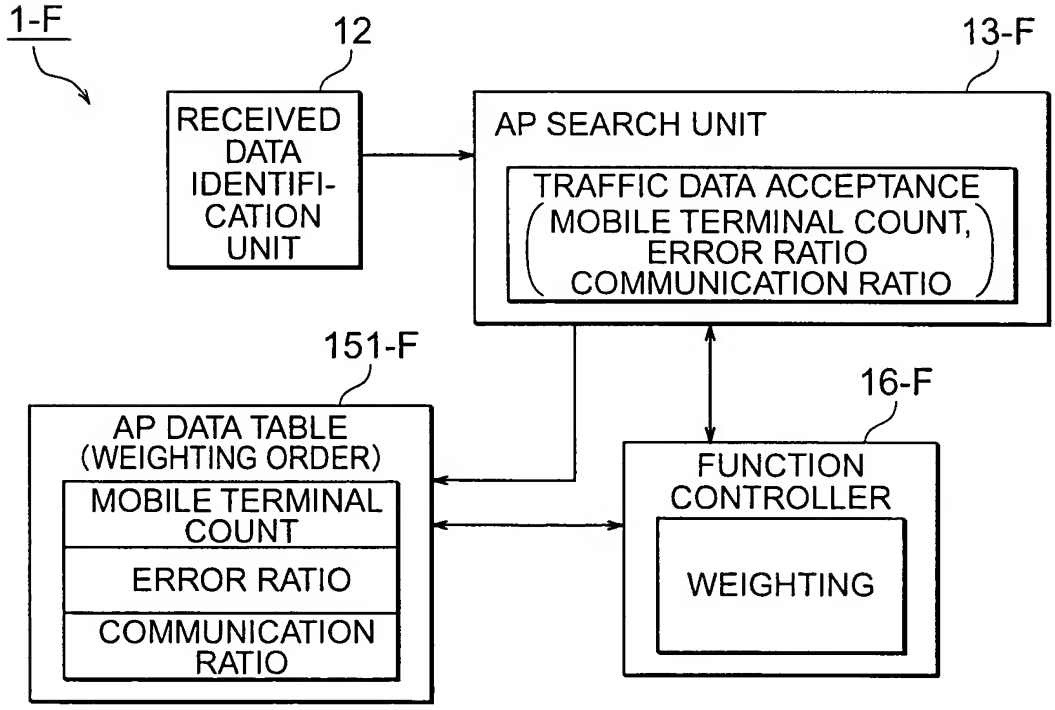

1-F
12
13-F
RECEIVED DATA IDENTIFI-CATION UNIT
AP SEARCH UNIT
TRAFFIC DATA ACCEPTANCE
MOBILE TERMINAL COUNT,
ERROR RATIO
COMMUNICATION RATIO
151-F
16-F
AP DATA TABLE (WEIGHTING ORDER)
MOBILE TERMINAL COUNT
ERROR RATIO
COMMUNICATION RATIO
FUNCTION CONTROLLER
WEIGHTING

FIG. 15

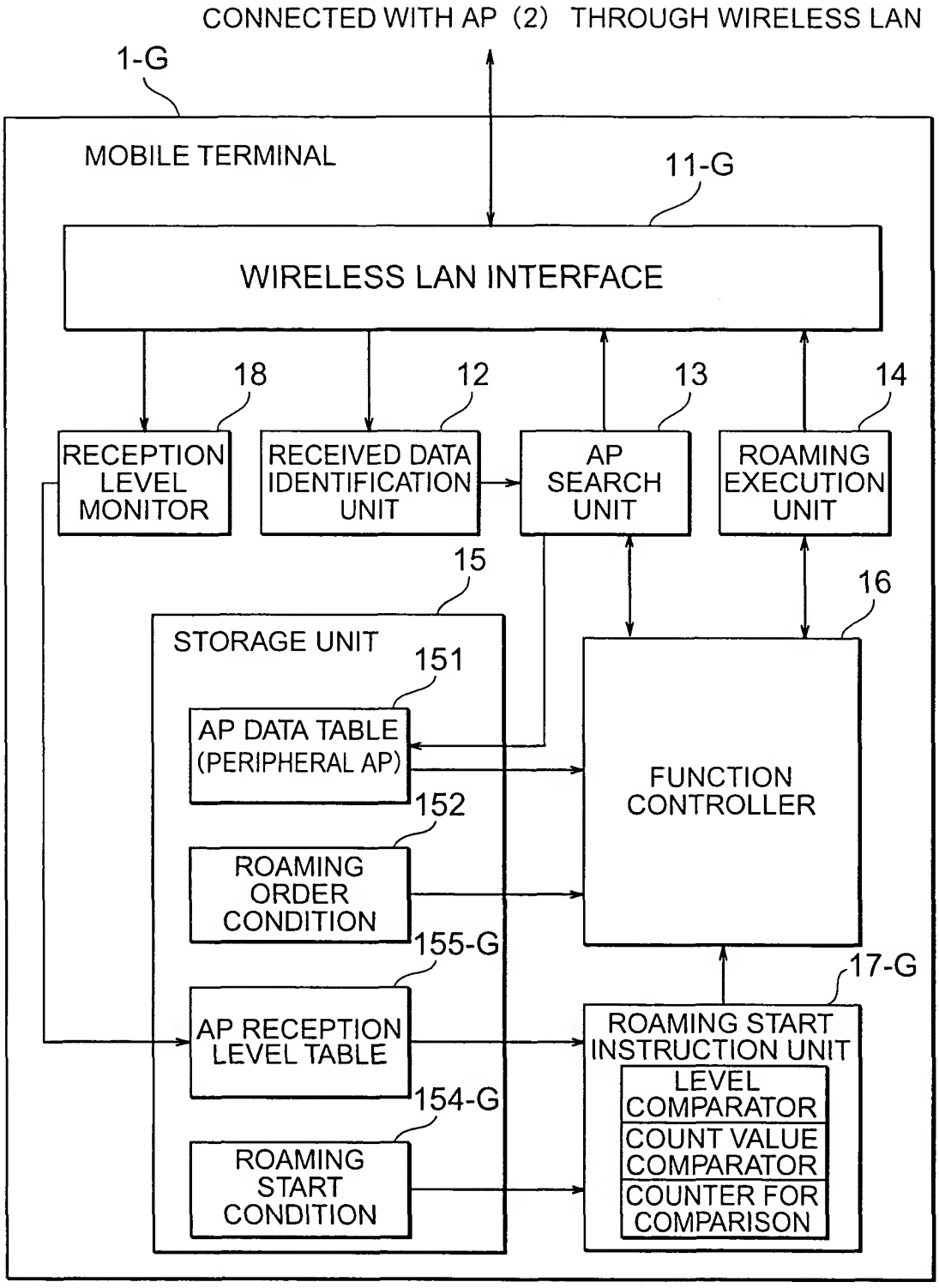

CONNECTED WITH AP (2) THROUGH WIRELESS LAN (3)
1-G
MOBILE TERMINAL
11-G
WIRELESS LAN INTERFACE
18
12
13
14
RECEPTION LEVEL MONITOR
RECEIVED DATA IDENTIFICATION UNIT
AP SEARCH UNIT
ROAMING EXECUTION UNIT
15
16
STORAGE UNIT
151
AP DATA TABLE (PERIPHERAL AP)
152
ROAMING ORDER CONDITION
155-G
AP RECEPTION LEVEL TABLE
154-G
ROAMING START CONDITION
FUNCTION CONTROLLER
17-G
ROAMING START INSTRUCTION UNIT
LEVEL COMPARATOR
COUNT VALUE COMPARATOR
COUNTER FOR COMPARISON

FIG. 16

155-G

PARENT STATION AP RECEPTION LEVEL TABLE			
MANAGEMENT NUMBER	BSSID	TIME STAMP	RECEPTION LEVEL
1	XX.XX.XX.XX.XX.01	XX.XX.18	55%
2	XX.XX.XX.XX.XX.01	XX.XX.13	60%
3	XX.XX.XX.XX.XX.01	XX.XX.10	70%
4	XX.XX.XX.XX.XX.01	XX.XX.07	90%
5	XX.XX.XX.XX.XX.01	XX.XX.05	70%
6	XX.XX.XX.XX.XX.01	XX.XX.02	100%
⋮			

FIG. 17

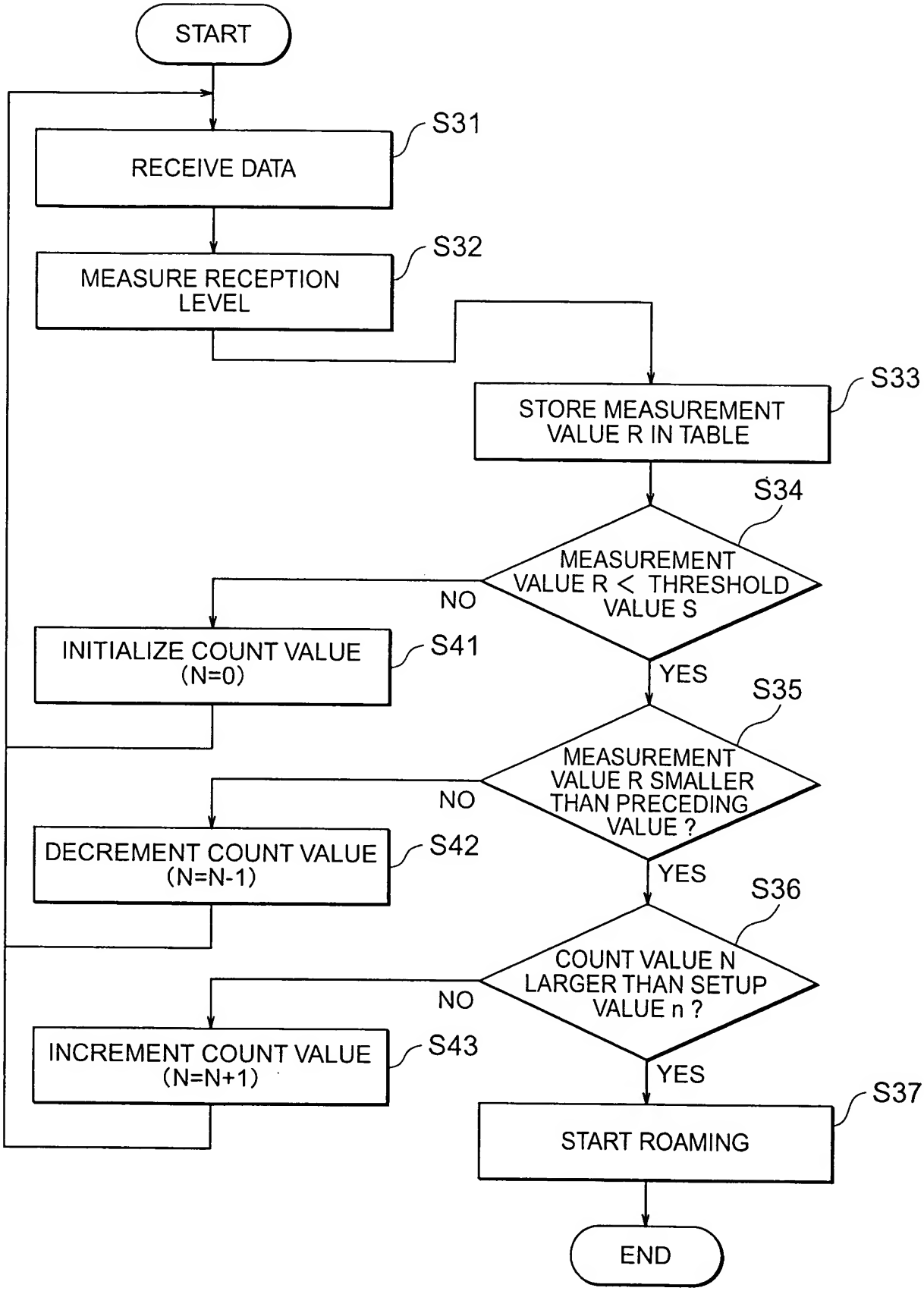
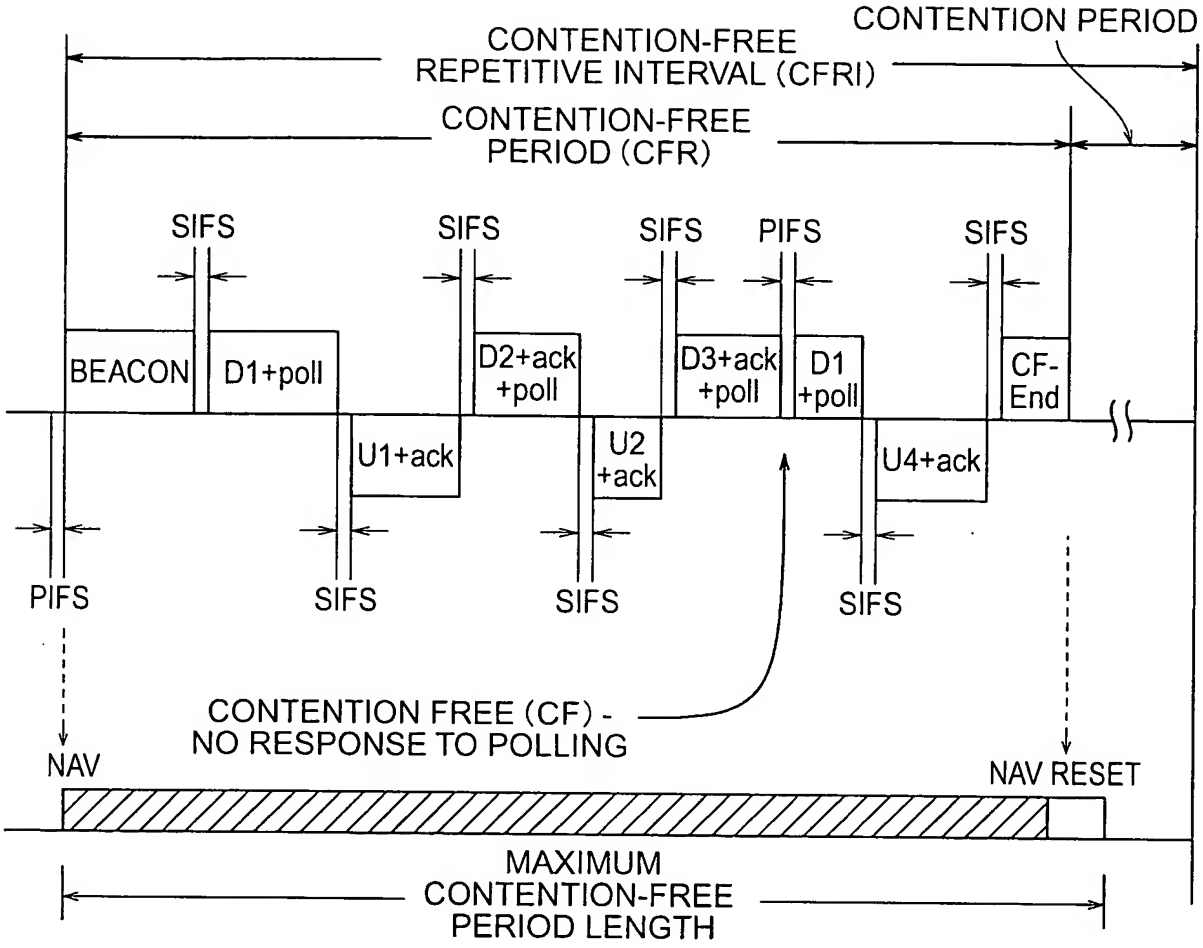

START
S31
RECEIVE DATA
S32
MEASURE RECEPTION LEVEL
S33
STORE MEASUREMENT VALUE R IN TABLE
S34
MEASUREMENT VALUE R < THRESHOLD VALUE S
NO
YES
S41
INITIALIZE COUNT VALUE (N=0)
S35
MEASUREMENT VALUE R SMALLER THAN PRECEDING VALUE ?
NO
YES
S42
DECREMENT COUNT VALUE (N=N-1)
S36
COUNT VALUE N LARGER THAN SETUP VALUE n ?
NO
YES
S43
INCREMENT COUNT VALUE (N=N+1)
S37
START ROAMING
END

FIG. 18



Dx : FRAME TRANSMITTED FROM AP

Ux : FRAME TRANSMITTED FROM POLLED MOBILE TERMINAL

poll : POLLING

ack : ACKNOWLEGE
(ACKNOWLEGE RESPONSE TO RECEIVED SIGNAL)

FIG. 19

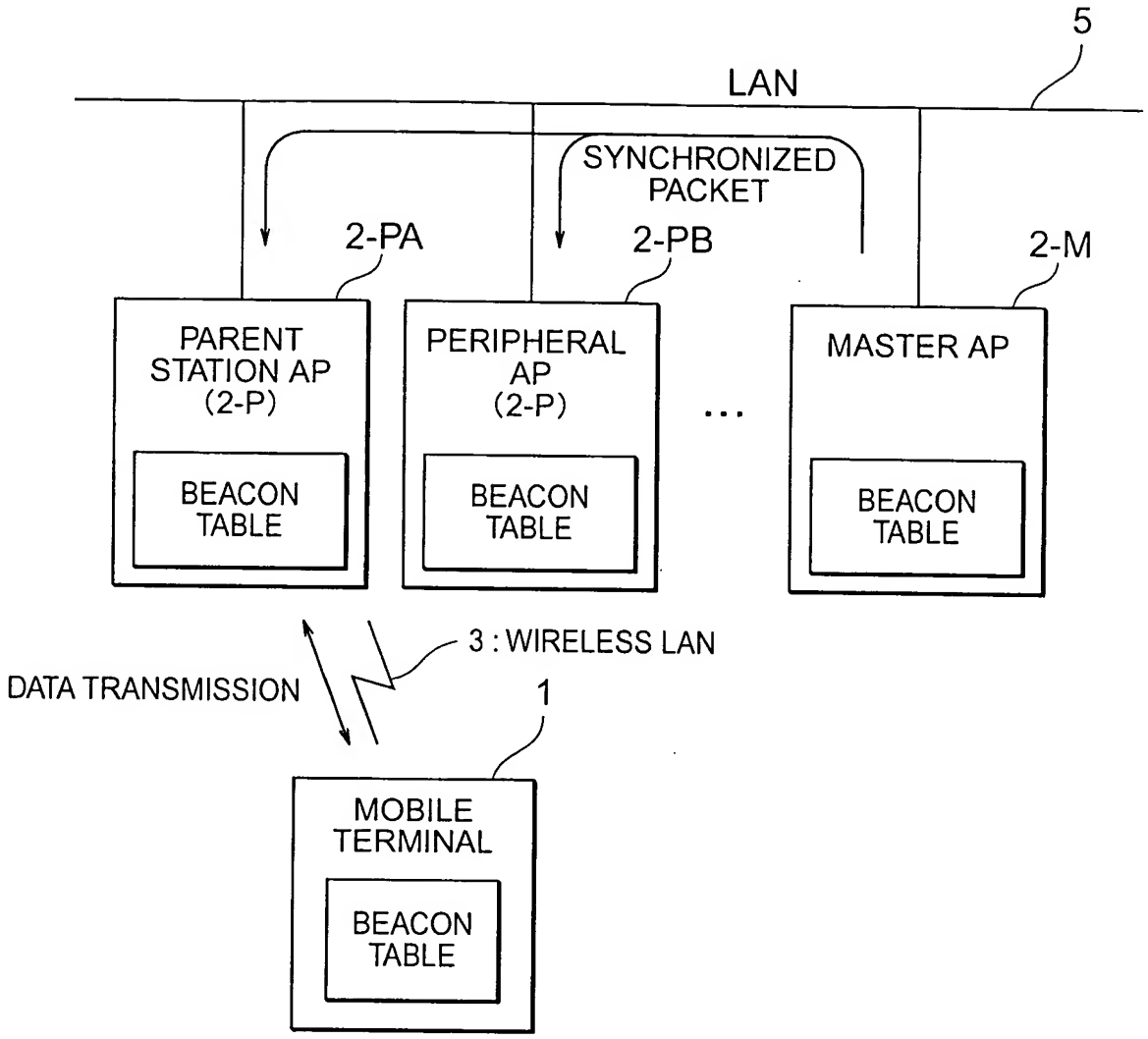

5
LAN
SYNCHRONIZED PACKET
2-PA
2-PB
2-M
PARENT STATION AP (2-P)
BEACON TABLE
PERIPHERAL AP (2-P)
BEACON TABLE
...
MASTER AP
BEACON TABLE
3 : WIRELESS LAN
DATA TRANSMISSION
1
MOBILE TERMINAL
BEACON TABLE

FIG. 20

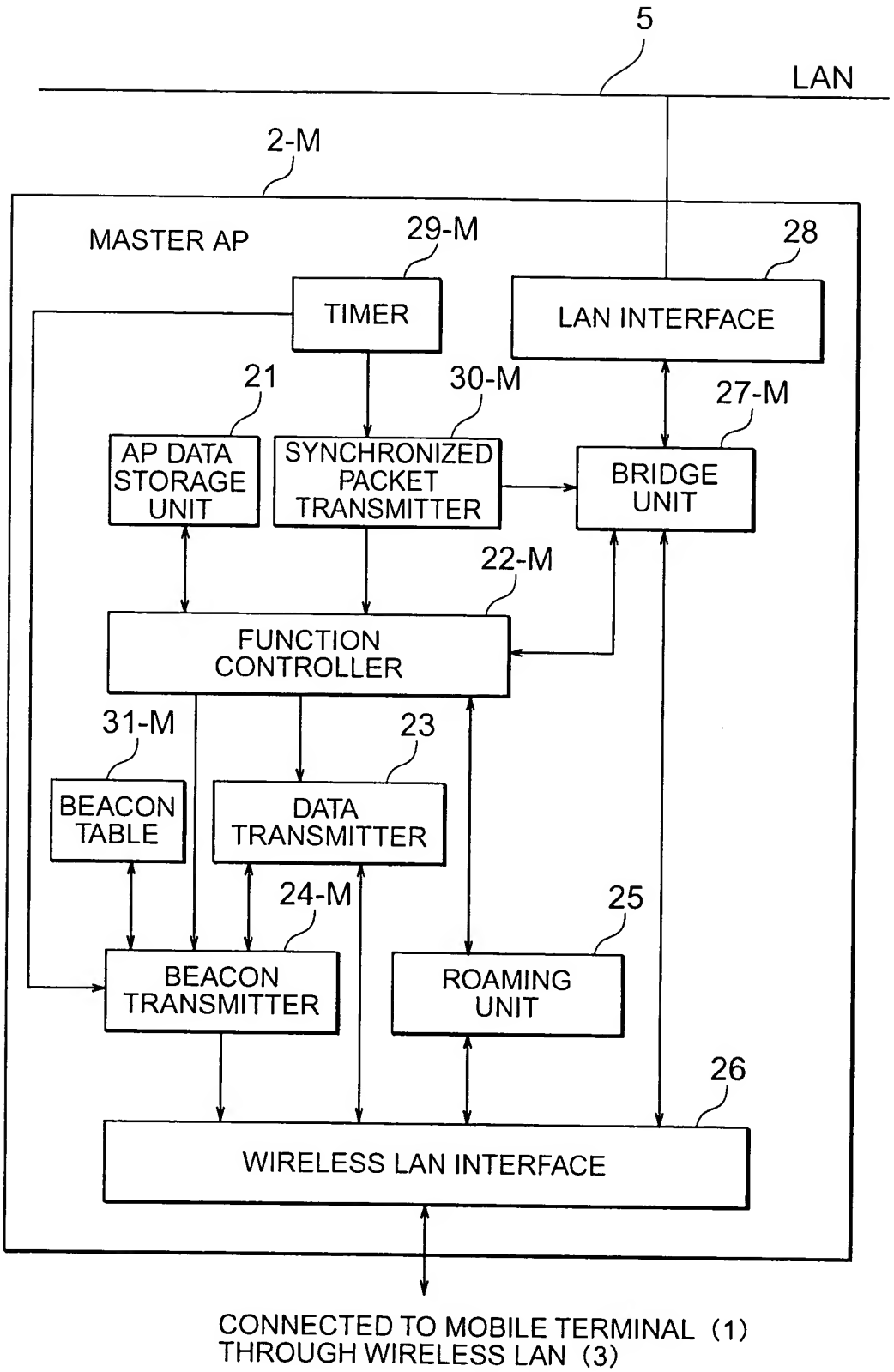

5
LAN
2-M
MASTER AP
29-M
28
TIMER
LAN INTERFACE
21
30-M
27-M
AP DATA STORAGE UNIT
SYNCHRONIZED PACKET TRANSMITTER
BRIDGE UNIT
22-M
FUNCTION CONTROLLER
31-M
23
BEACON TABLE
DATA TRANSMITTER
24-M
25
BEACON TRANSMITTER
ROAMING UNIT
26
WIRELESS LAN INTERFACE
CONNECTED TO MOBILE TERMINAL (1) THROUGH WIRELESS LAN (3)

FIG. 21

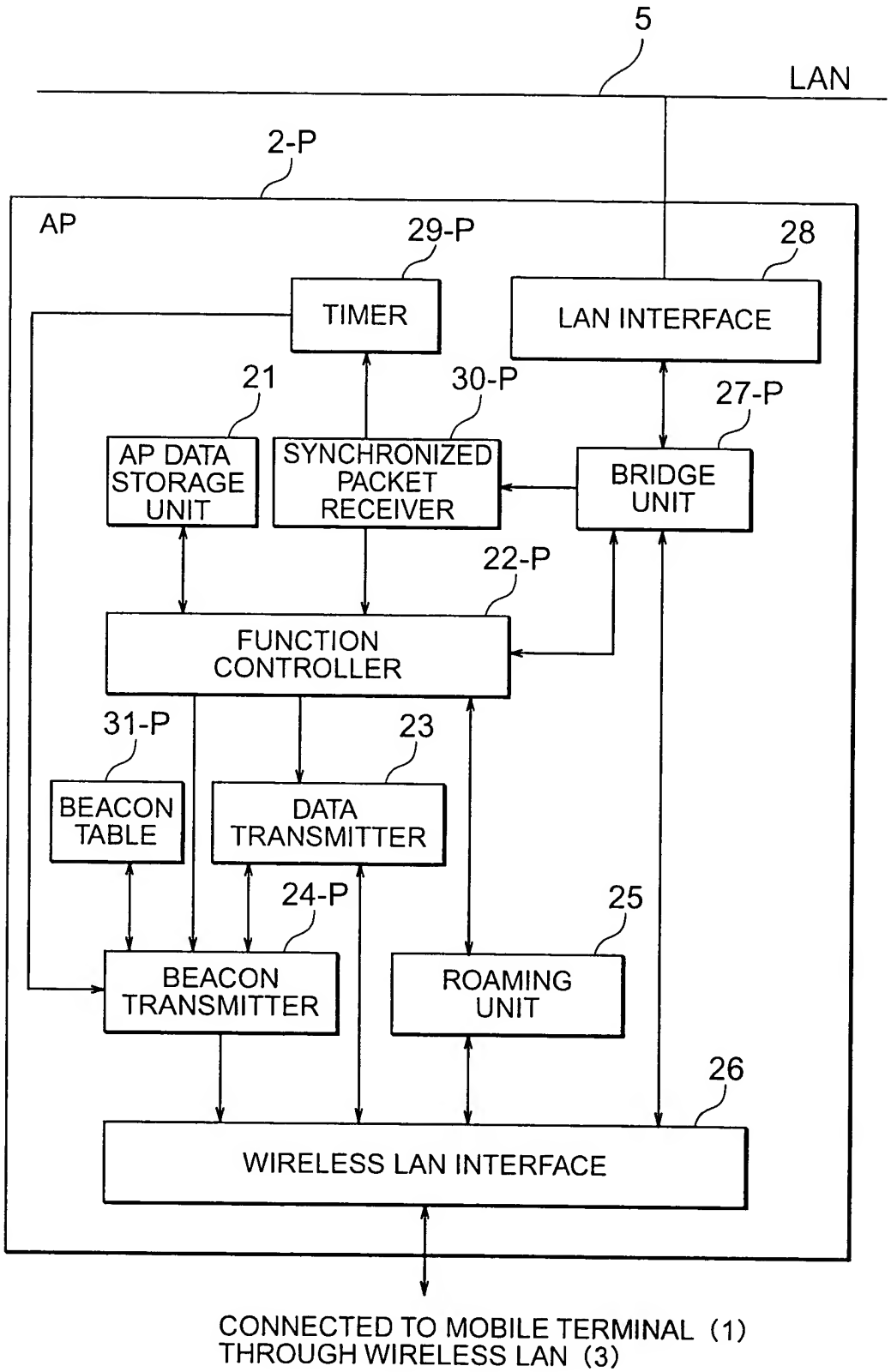

5
LAN
2-P
AP
29-P
28
TIMER
LAN INTERFACE
21
30-P
27-P
AP DATA STORAGE UNIT
SYNCHRONIZED PACKET RECEIVER
BRIDGE UNIT
22-P
FUNCTION CONTROLLER
31-P
23
BEACON TABLE
DATA TRANSMITTER
24-P
25
BEACON TRANSMITTER
ROAMING UNIT
26
WIRELESS LAN INTERFACE
CONNECTED TO MOBILE TERMINAL (1)
THROUGH WIRELESS LAN (3)

FIG. 22

BEACON TIMING TABLE	
CHANNEL NUMBER	ADDITIONAL TIME TO REFERENCE TIME
1	0
2	+ 5 ms
3	+ 10 ms
4	+ 15 ms
⋮	

FIG. 23

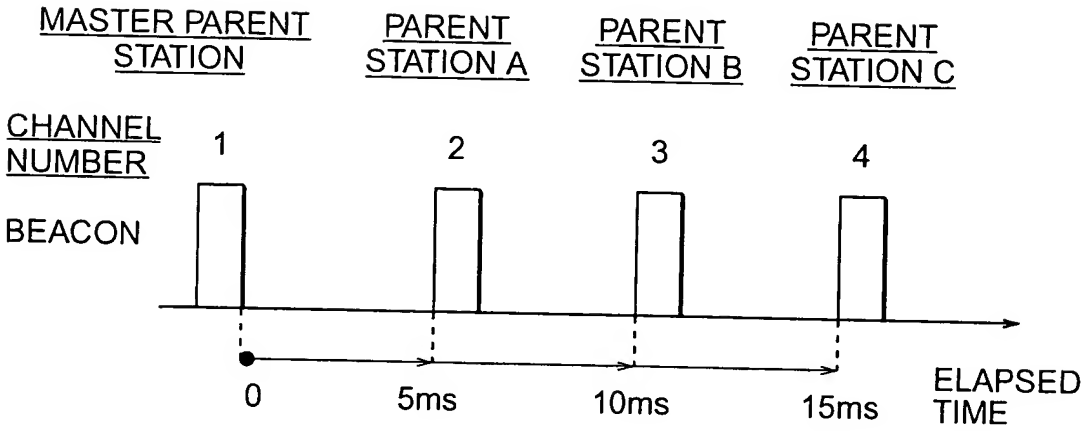


FIG. 24

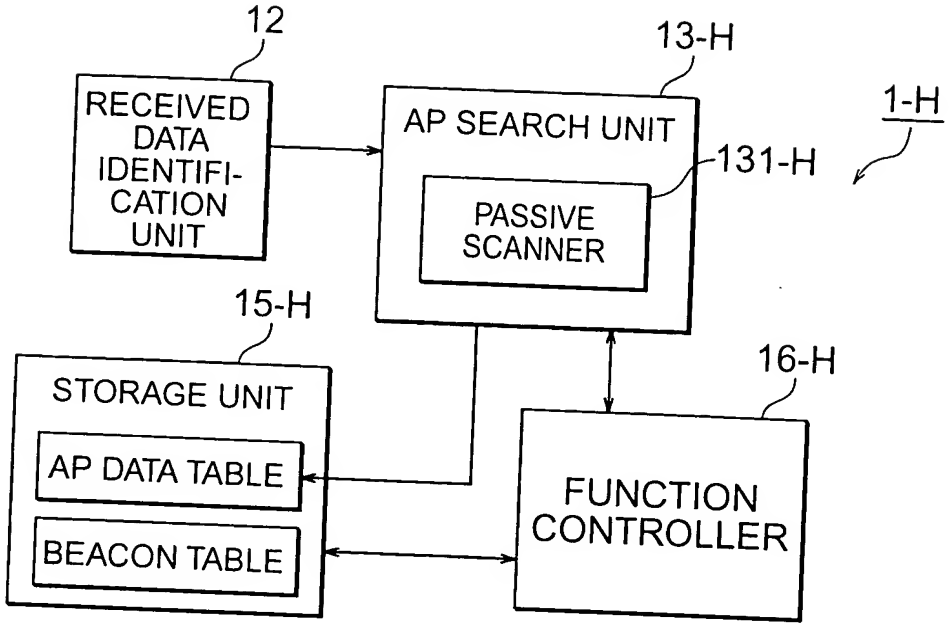

12
RECEIVED DATA IDENTIFI-CATION UNIT
13-H
AP SEARCH UNIT
131-H
PASSIVE SCANNER
1-H
15-H
STORAGE UNIT
AP DATA TABLE
BEACON TABLE
16-H
FUNCTION CONTROLLER

FIG. 25

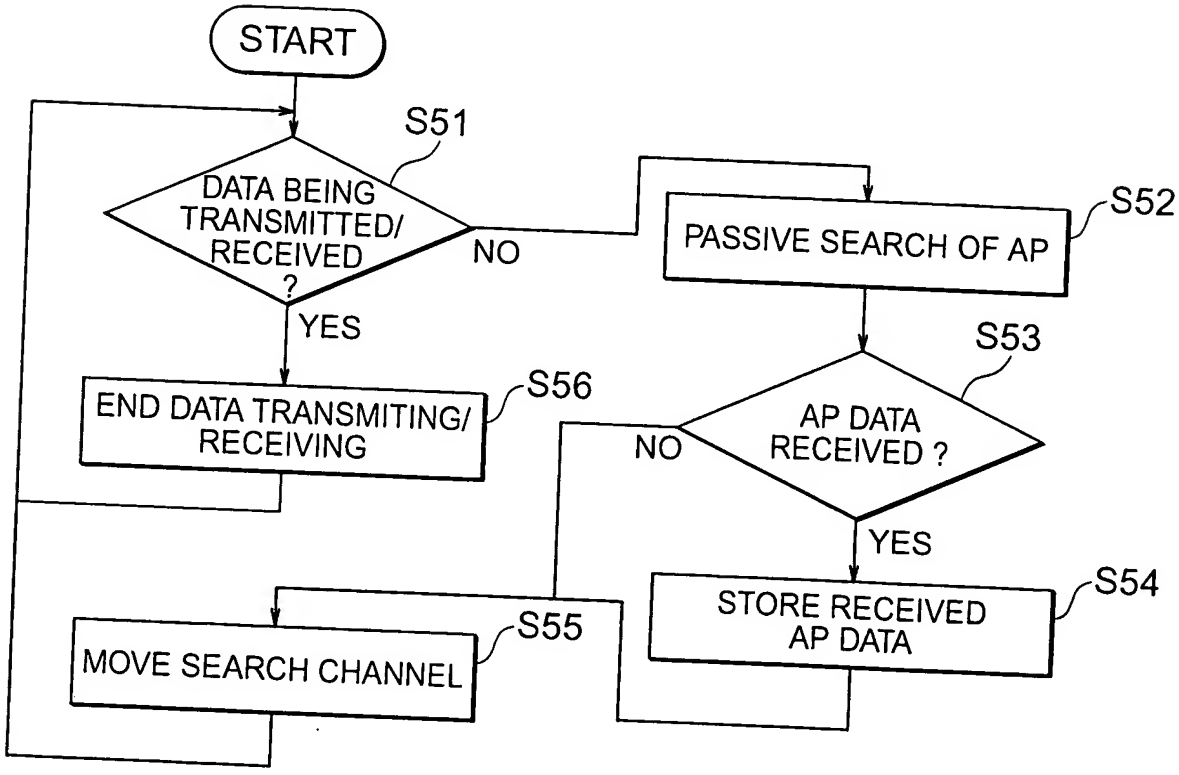

START
S51
DATA BEING TRANSMITTED/ RECEIVED ?
NO
YES
S52
PASSIVE SEARCH OF AP
S53
AP DATA RECEIVED ?
NO
YES
S54
STORE RECEIVED AP DATA
S55
MOVE SEARCH CHANNEL
S56
END DATA TRANSMITING/ RECEIVING

FIG. 26

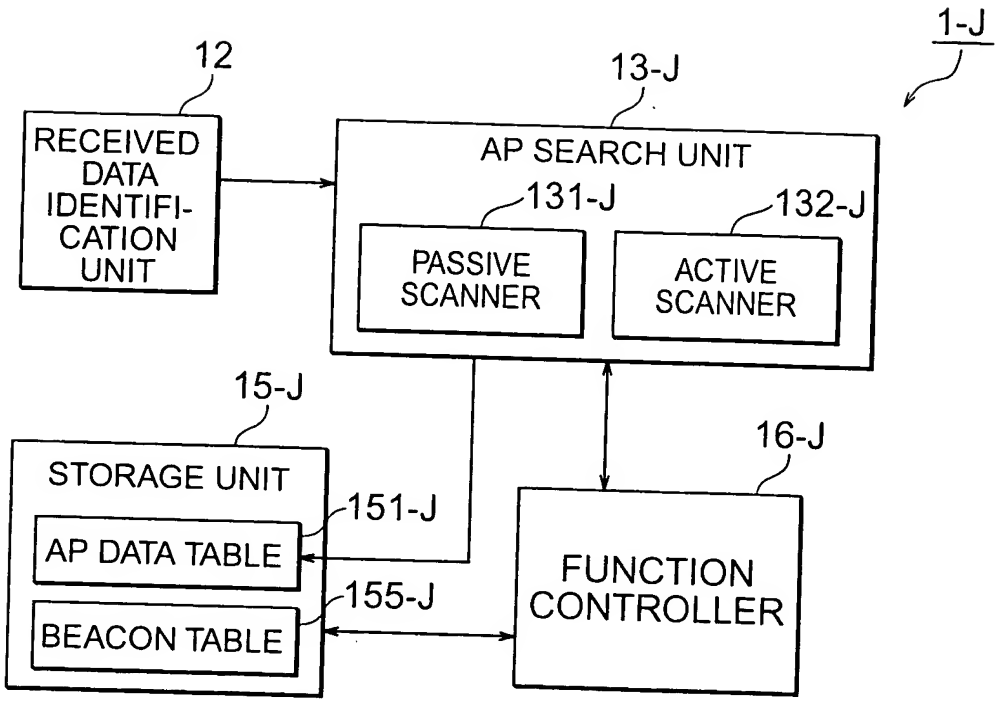

1-J
12
13-J
RECEIVED DATA IDENTIFI-CATION UNIT
AP SEARCH UNIT
131-J
132-J
PASSIVE SCANNER
ACTIVE SCANNER
15-J
16-J
STORAGE UNIT
151-J
AP DATA TABLE
155-J
BEACON TABLE
FUNCTION CONTROLLER

FIG. 27